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ABSTRACT

The "paradigm dialogue" is an attempt to examine the philosophical positions of competing social science "ways of knowing" in the hope of establishing a dialogue among these different schools of thought. Three paradigms--postpositivism, critical theory, and constructivism--were examined in regard to their stances on three philosophical issues: ontology, epistemology, and methodology. Postpositivism has a critical realist ontology in which objects existed but could only be approximately known to scientists through experimental methods. Critical theory requires a realist ontology that is similar to positivistic certainty in which objects exist and exert their influence through a veil of understanding that is understood through hermeneutic/descriptive methods. Constructivism has a relativist ontology that collapses the distinction between knower and known and attempts to approximate local realities through a dialectical process. A comparison of these research paradigms, using K. R. Popper's (1994) world3 model, demonstrated serious problems for constructivists and critical theorists. Constructivists are forced to either abandon their relativist ontology due to its dependence on a world created by the mind, or become folded into postpositivism. Critical theorists are confronted with the notion of becoming the heirs of Comtian (1988) positivism through the reliance on certain knowledge revealed through science. Contains 11 tables, 1 figure, and 26 references. (Author/BT)

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A comparison of philosophies of inquiry in the social sciences

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Abstract

The "paradigm dialogue" is an attempt to examine the philosophical positions of competing social science "ways of knowing" in the hope of establishing a dialogue between these different schools of thought. Three paradigms, postpositivism, critical theory, and constructivism, were examined in regard to their stances on three philosophical issues: ontology, epistemology, and methodology. Postpositivism has a critical realist ontology, in which objects existed but could only be approximately known to scientists through experimental methods. Critical theory requires a realist ontology that is similar to positivistic certainty, in which objects exist and exert their influence through a veiled of understanding that is understood through hermenutic/descriptive methods. Constructivism has a relativist ontology that collapses the distinction between knower and known and attempts to approximate local realities through a dialectical process. A comparison of these research paradigms, using Popper's (1994) world3 model, demonstrated serious problems for constructivists and critical theorists. Constructivists are forced to either abandon their relativist ontology, due to its dependence on a world created by our minds, or become folded into postpositivism. Critical theorists are confronted with the notion of becoming the heirs of Comtian (1988) positivism through the reliance on certain knowledge revealed through science.

The Poverty of Constructivism:

A comparison of philosophies of inquiry in the social sciences

The social sciences emerged out of the older disciplines of philosophy and the physical sciences into their modern formulations as autonomous fields of inquiry. In so doing the social sciences have taken steps to legitimize not only their own areas of study, but their own methods of study. As fields like sociology, anthropology and education (to name but a few) have developed into clearly defined content areas, traditional methods of data collection have increasingly come under fire as somewhat atavistic. As new methods of "knowing" emerged, each naturally competed with existing methods for legitimacy. Specifically, this notion of competing paradigms within social sciences has been addressed recently, most notably in a conference recorded in *The Paradigm Dialogue* (Guba, 1990) in which a collection of scholars attempted to examine the perspectives of competing ways of knowing within the social sciences.

The "Paradigm Dialogue" as conceptualized by Guba (1990) consists of the systematic investigation of the underlying philosophies driving current social science research. Guba derives this topic from the venerable tradition of the history of science yet ignores several influential formulations including Kuhn's (1970) notion of paradigm shifts, Laudan's (1977) notion of research traditions and most notably, Popper's (1963) fatal critiques of both positivism and, subsequently, induction as a tool of certainty.

Guba's (1990) formulations of the current state of social science inquiry are timely and important. The current state of incommensurate research programs

seems to be as diametrically opposed as Kuhn (1970) suggested. Thus Guba's attempt to describe each to provide a sort of "translation" between each is useful, particularly to anyone currently engaged in research within the social sciences. Guba sets out to examine each tradition by comparing the positions of each on three primary philosophical criteria: ontology, epistemology, and methodology. Each is well chosen due to the nature of what adherence to a paradigm provides according to Kuhn (1970) and Masterman (1970). The first of these philosophical criteria is ontology, an indication of what exists, or what is an appropriate object for study. The second is epistemology, or how what exists can be known to the researcher. Finally, methodology examines what are appropriate measures to study this phenomenon. Thus Guba introduces a useful framework through which paradigms can be compared with the philosophical underpinnings of the others.

Though Guba's formulation sets the framework well, three main problems result from the details of this work: 1) the inclusion of positivism and the ramification of this inclusion, 2) the nature of each paradigm's philosophical position as characterized by Guba and 3) the resulting graphic representation of these paradigms. Each of the problems will be discussed in more detail.

The Inclusion of Positivism

The inclusion of positivism as a working modern paradigm serves little purpose in the light of the work of Popper (1957, 1963, 1972). Its inclusion serves to reduce postpositivism into a sort of "default tradition" that is "broken" yet retaining its influence through its close association with the former tradition.

Further, Guba (1990) lapses into unwarranted hyperbole in the service of discrediting postpositivism by speculating on the intentions of researchers within this tradition. For example, Guba states that "It is believed that, if [imbalances in inquiry] can be redressed, positivism, in its new postpositivist clothes, can be made useful again" (Guba, 1990, p. 21). This quote demonstrates two serious problems with this formulation of a "paradigm dialogue" : a) the tendency to misrepresent paradigms not defended by the author and b) an attempt to cast other scientific traditions into "good guys" and "bad guys." The result of these two factors is to produce criticism from those within alternative paradigms that is inaccurate and counterproductive.

Guba (1990) examines the nature of each paradigm, yet the rationale for the relative placement of each paradigm in terms of their philosophical axioms is somewhat questionable due to the lack of evidence for each (as is suggested above). For example, according to Guba the positions of positivism and postpositivism "differ very little" (1990, p. 23), yet the work of Popper (1963) and Laudan (1977) demonstrate a sharp contrast between the two particularly in terms of ontology and epistemology. Therefore other sources need to be utilized to rectify the positioning of each paradigm on the three philosophical criteria provided.

Finally the graphic representation (Guba & Lincoln, 1994) of these traditions is questionable due to the fact that each paradigm (within the paradigm dialogue framework) is contrasted on at least three axes. Hence when a single line is offered for a representation, this gives an impression that runs counter to the

information contained within the article. In this article, an alternative explanation will be offered for the graphic representation and an alternative graphic will be provided.

Insert Table 1 About Here

This critique of the "paradigm dialogue" will be facilitated through the elucidation of the limitations of Guba's (1990) formulation. This critique will involve four areas: 1) a critique of Guba's (1990) article and in particular the representations of each "paradigm," 2) the addition of Popper's (1994) world3 model through which each position is more precisely elucidated, 3) a graphic representation that allows for a more accurate representation of the contrasting positions on each issue and 4) a critical examination of the philosophical position provided by researchers operating within each paradigm. Once combined these critiques result in a clearer representation of each school of thought within contemporary social sciences.

Expanding the Dialogue

In attempting to rectify the limitations of Guba's model of "paradigms" it is useful to revisit positions provided by several influential scholars who have written extensively on the philosophy of science, yet have been ignored to the detriment of the paradigm dialogue. The work of Kuhn (1970), Laudan (1977)

and Popper (1963, 1972, 1994) examine many of the issues "introduced" by Guba.

Kuhn's (1970) *Structure of Scientific Revolutions* examined the role of non-scientific factors in the progression of science. Kuhn's work examines the history of science descriptively, unlike Popper and Laudan's prescriptive analysis of science. *Structure of Scientific Revolutions* examined the sociological character of research communities suggesting that the process of selecting a "paradigm" is not entirely "scientific", it is influenced by less data driven methods such as intuition. Though his book was intended to be an addition to the understanding of scientific investigation (Kuhn, 1977), it has since been used primarily by opponents of post- positivistic science as a refutation of Western empirical inquiry (Guba & Lincoln, 1994).

Popper (1963, 1972) provided a critique of positivism that focused on the notion of certainty, that is, the Comtian (Comte, 1988; Lewes, 1890) belief that through the pursuit of a systematic, scientific inquiry, one can come to scientific "truth." Popper challenged this claim by examining the logical processes that are involved in scientific inquiry. The first is the notion of theory generation (though somewhat dismissed by Popper as unknowable, Pierce (1957) terms this process abductive logic) which involves the cohesive system of interconnected concepts and the explanations of their interconnectedness. The second process is deriving hypotheses deductively from theory, then testing these hypotheses.

After testing, one must reason inductively from the results of the experiment back to the overall tenets of the theory. This step is the point at which

certainty is untenable according to Popper, due to the limitations of inductive reasoning. One may induce that the result is consonant with any number of hypotheses, thus leading to uncertainty. Further, even if one can narrow the induction to a single set of theoretical variables, it would require an infinite number of tests to confirm due to the principle of falsifiability (Popper, 1963). The principle of falsifiability states that one disconfirming instance is capable of refuting any hypothesis. For example, all swans are white is a proposition that is refuted by one black swan even if one has documented a thousand white swans. Taken together, this logical counterargument effectively destroyed the notion of Comte's (1988) certainty resulting from positivistic scientific inquiry.

Laudan (1977) subsumes the work of these and other philosophers of science in defining postpositivist social science. *Progress and its Problems* examined the problems with Kuhn and Popper's notions of anomalies and introduces a new notion of scientific progress. The notion of an anomaly, or a case which cannot be explained by the present state of a theory, is seen by Kuhn as a central task in the course of normal science that has the possibility (if left unresolved) to undermine the existing paradigm. Popper (1963) sees anomalies as the falsifying instances that effectively refute the theory or hypothesis from which it is drawn. Laudan conceptualizes anomalies as problems for any theory dealing with the same topic. Thus science is not confined to the strict parameters delineated by Kuhn and Popper, but exists through the attempt to explain phenomena common to subject areas.

Laudan (1977) introduces his notion of scientific progress that entails a method of evaluating the research tradition under which a scientist works. Scientific progress from Laudan is the ratio of "solved" problems to unsolved or anomalous problems. That is, if in fact there are more problems that can be explained by theoretical and empirical evidence than problems that are unexplained, then Laudan considers this a useful research tradition. Since one cannot establish absolute certainty, then this method of evaluation, the usefulness of a research tradition, retains the empirical and nonempirical aspects of actual science while allowing evaluation of competing theories. a perspective markedly different than Comtian certainty (Comte, 1988).

The model proposed in the following sections will contrast to Guba's formulation through four major areas alluded to earlier: 1) three paradigms instead of four will be examined, 2) each paradigm will be examined in respect to its philosophical position on three issues- ontology, epistemology, and methodology, 3) the philosophical positions within each paradigm will be examined within Popper's (1994) notion of world3 to further clarify implications of each system and 4) four different graphic representations will be offered: one which examines the relative positions of each paradigm on each of the philosophical issues individually and the fourth a single, three dimensional model which synthesizes all three positions into one representation that examines the relative position of each paradigm when plotted into conceptual space. Each paradigm will be examined on all philosophical positions in turn, then all will be compared to establish their relative positions.

World3

Popper's (1994) notion of world3 was originally conceived as a useful model through which the philosophical debate surrounding the mind-body problem, or the problem of knowledge, could be discussed. It is useful in this context because of its focus on the issues surrounding the relationship between human perception understanding and the physical world in which humans exist.

World3 consists of three components that will first be discussed then graphically represented along with their patterns of interaction. World1 consists of physical bodies and their physical/psychological states. World2 consists of mental states or subjective perceptions. World3 consists of the products of the human mind. Since the human mind creates objects that then exist in the world, some objects belong to both world1 and world3. The difference therefore is in the nature of their creation. One fundamental assumption is that world1 and world 3 are known only through world2, mental states. Using this trifurcated distinction, the philosophical positions of each paradigm can be more precisely defined and the implications of each position more accurately deduced. (Below from Popper, 1994)

Insert Table 2 About Here

Excluding Positivism

The first issue to be discussed concerns the decision to exclude positivism from the "paradigm dialogue." The primary motivation for this exclusion has already been detailed in the discussion of Popper's (1963) refutation of certainty and the limitations of induction in the scientific method. The type of "classification of the sciences" that Comte (1988) claimed for the methods of physics as the tools for the social sciences were rooted in the traditions of Newtonian physics. Further, their usefulness as a method of certainty was undermined by the revolutions in physics that historically began with Einstein and culminated in the Copenhagen interpretation of quantum mechanics (Heisenberg, 1991). These changes in the nature of science's understanding of the physical universe reverberated through the hard sciences but left the social sciences behind. The continuation of the Newtonian philosophy was overlooked by many social scientists leading researchers to look for "new" methods of studying human behavior.

Taken together these historical changes are depicted and synthesized in the work of Popper (1959,1963) the work of Kuhn (1970) and more recently Laudan (1977). These historians of science have effectively destroyed the polemics associated with the notions of a positivistic social science, yet positivism still exists in the critiques of social scientists who operate under alternative research paradigms. This criticism is used to equate postpositivsm as an ad hoc modification to positivism, an outmoded research mission of ineffective methodologies. Guba's (1990) formulation graphically demonstrates this notion

of tying a pejorative connotation to postpositivism by representing it as such a close relative to positivism. Therefore, positivism as a research tradition is as dead as Popper claims that it is (Popper, 1972) and should not be included in any modern formulation of research paradigms.

Postpositivism

Post-positivism is the first paradigm to be considered. Contra Guba (1994) this tradition is not simply an ad-hoc attempt to salvage the tradition of positivism, it is a tradition that operates under very different philosophical positions from positivism. The accounts of post-positivism taken for this paper will be taken primarily from two authors: Popper (1956, 1965) and Laudan (1977). The positions described by these authors will be examined on the following criteria: ontology, epistemology, and methodology.

Postpositivism has a realist ontology that conceptualizes "real" objects and forces in the world that are independent of the observer (Guba, 1990; Laudan, 1977). This ontology suggests that the participation of human observation and understanding are not necessary for objects and forces to exist in the universe. Though this realist ontology posits these observer-independent objects and forces, it does not suggest that our understanding of them will ever be complete or accurate, only loosely approximated. This philosophical stance is an important departure from the tradition of Comte (1988) in that Comtian certainty was "truth", a term not found in post-positivistic research. Consider for example Laudan's (1976) notion of research traditions in which "truth" is tacitly excluded

in favor of utility, that is, if a research tradition seems to be working and producing results that are consonant with theory and observed outcomes, then it is useful. Therefore this critical realism identifies objects as "real" yet human perception is unable to apprehend their "true" nature due to the limitations of our methods of knowing (Popper, 1963).

Insert Table 3 About Here

The post-positivistic researcher accepts that the objects that exist cannot be fully apprehended through our methods of knowing. The interaction of the knower and the known influence the outcome of research, as is informed by the Copenhagen interpretation. This, combined with induction eliminates the possibility of certain knowledge (Popper, 1965; Guba, 1990). Since methods themselves cannot insure truth and since Comtian certainty is untenable, post-positivism holds objectivity as an ideal through which science can function through the rigorous application of systematic inquiry that is examined by a community of peers (Kerlinger, 1986). Although the collective body of scientists should provide the measure of evaluation of research, this formulation is seen as unfair to Guba (1990) who claims that this position insures postpositivist hegemony. Thus community based objectivity should be understood as a form of communication, not a distancing from the object of inquiry.

Insert Table 4 About Here

Finally, the methodology of post-positivism consists of a focus on the use of both descriptive and experimental methods, both quantitative and qualitative approaches. The methods used are primarily in the service of hypothesis testing, that is, a research question derived from theory. Contrary to the critics of post-positivism, theory-ladenness of facts is subsumed under this perspective clearly demonstrated in the proposition that hypotheses are derived from theory (Popper, 1963). Thus the methodology is focused on hypothesis testing through experimental and descriptive means.

Insert Table 5 About Here

Examining the philosophical positions of postpositivism within Popper's (1994) world3 model demonstrates a high level of internal consistency between its axioms. First, postpositivism's realist ontology acknowledges the existence of both world1 and world3, that is, objects exist both independent of human existence and through the application of world2 or human mental states.

Epistemologically, the relationship between the existence of these objects and human understanding is never a one to one correspondence but an imperfect

approximation. Thus the notion of certainty is eliminated from postpositivism and replaced with the notion of "usefulness" proposed by Laudan (1977).

The methodologies of science allow researchers to evaluate the usefulness of research traditions one may achieve a more or less satisfactory notion of usefulness. That is, products of the human mind such as science and theory (world3) are useful in approximating the existence and actions of objects in world1. Thus postpositivism shows a high degree of internal consistency when further examined through Popper's world3 model.

Critical Theory

Critical theory is a descendent of Marxist historicism in which the social conditions endemic to an era are the factors determining social change (Lincoln & Guba, 1994; Morrow, 1994). Critical theory typically rejects the notion of testing hypotheses through the application of experimental methodologies in favor of examining the particular historical forces that shape the context in which the phenomenon of interest exists. Deconstructionism is an example of critical theory examining behavior and phenomena. This tradition was derived from the work of a group of French writers including Derrida (1974), Foucalt (1970), and Lacan (1981) among others. The primary focus of deconstructionism is to examine the "real" events that are driving surface appearances for the goal of educating and emancipating those oppressed by false consciousness (Guba, 1990; Morrow, 1994).

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Critical theory retains the realist ontology of the positivist tradition. The practice of deconstructionism in particular is heavily invested in the notion of Durkheimian (1951) social facts which exert a consistent influence over the population as a whole. Two related propositions are interwoven in the previous statement: a) that social forces exist, and b) these forces are the dominant predictors of human behavior. That social forces exist is in fact a realist position, even though these forces are not accessible to direct perception because these perceptual mechanisms are shaped by the dominant ideologies of one's historic epoch. Therefore critical theorists assume a "veiled" realism, that objects exist, yet are only directly accessible through the methods of deconstructionism. This type of ontology more closely resembles Comtian (1988) certainty than postpositivism's critical realism.

The second component to this veiled realism is the notion of social forces as the principle motivator of human behavior. This type of radical contextualism eschews the possibility of individual interpretations of social forces and produces of a type of neo-behaviorism that finds humans as simple reactors, not actors, within an environment. The notion of individual interpretations must be logically eliminated from a veiled realist ontology because interpretation necessarily leads to differences. In this case, the differences would take the form of people interpreting these events (not social facts) in ways that would change their "effectiveness", resulting in different degrees of oppression within the same groups (Ritzer, 1980). This formulation would more closely resemble social definition in the tradition of Weber (1968; Ritzer, 1980).

Insert Table 6 About Here

Critical theory espouses an epistemology that is claimed to be subjectivist, yet contains elements of objectivity that undermine a collapse of the knower/known distinction. Critical theorists hold that since values permeate scientific inquiry, it is impossible to be completely objective, resulting in infusing investigations with one's value system. In addition, since the goal of research is to emancipate through transforming consciousness, critical theorists seek to know reality as it is, a seemingly impossible task noting the internal contradictions previously stated.

What becomes problematic for this position is the notion of the values of the researcher. Since one cannot in fact "bracket" (Husserl, 1962) one's own self in the course of inquiry, the only possible result within this philosophical system will be the perpetuation of one's current value system. The attempts to transform consciousness may occur, but not through the unveiling of the "true" state of affairs, but through the application of the values of the researcher which permeate the data collected in the hopes of emancipation. Again, this notion of "truth" echoes Comtian (1988; Lewes, 1890) positivistic certainty.

Insert Table 7 About Here

Finally the methodology of critical theory is seen as a combination of hermenutic and descriptive. The combination results in the attempt to "read between the lines" of the work of others in the hope of isolating the dialectical concepts and gaining understanding within the concepts of this polarization (Lather, 1990). The method is primarily derived from French literary criticism and focuses on transforming consciousness. Thus the hypothesis testing used in post-positivism is seen as simple ideology within critical theory. On the level of methodology, critical theory is very consistent to both its beliefs and its aims.

Insert Table 8 About Here

When examined through the world3 model, critical theory demonstrates some logical inconsistencies, although maintains many strengths. The first logical inconsistency is the conflicting notions of "true" realities while espousing a subjectivist epistemology. The notion of a "veiled" reality is necessary for critical theory because it is only through uncovering "true" reality is social change possible. However, if in fact there is a "true" reality is this reality world1 or world3 or both? World3 would be a more probable location for this "true"reality

since this is the product of human minds and because this reality is seen as influencing perception through world2. However, since the notion of world2 (mental states) is so dependent on the contents of world3 (e.g. theories, ideologies), the notion of a "true" reality outside of those notions becomes problematic.

The second major inconsistency is the reliance upon a notion of certainty that is more reminiscent of positivistic certainty than subjectivist relativism. The notion of a true reality that is somehow dependent on the correct lens of human understanding creates the impression of a more direct relationship between world1 and world2 that is very similar to Comtian (1988) notions of certainty. That is, that which can be gathered through the methods of deconstruction (for example) reveal the true state of the world, therefore producing a "more true" notion of the world. Less strongly stated though, this argument retains the powerful argument of mediation through mental processes. This argument, that the world is only apprehended through subjective mental states, retains validity while the stronger formulation is much more readily refuted.

Constructivism

Constructivism is a descendent of several subjectivist/relativist philosophies and influenced heavily by Anthropology. Constructivists view all other philosophies as inadequate primarily on ontological grounds (Guba, 1990). Guba (1990) sets forth the following arguments that are intended to distinguish constructivism (as he sees it) from the inadequacies of the other paradigms.

However in so doing, the point is only reinforced that this assessment is using a caricature of the other paradigms (most notably postpositivism) with which to compare constructivism. The three critiques Guba (1990) provides that lead one to constructivism are as follows (each of which will be discussed individually): a) the theory ladenness of facts, b) the underdetermination of theory, and c) the value ladenness of facts.

That facts are "theory laden" seems to be already established in both critical theory and postpositivism. In critical theory, it is axiomatic that since a "fact" is an artifact of an historical epoch, then it should be infused wit h both theories and values. Postpositivism is also predicated on this position due to the following: if the main aim of postpositivism is, as Guba (1990) himself claims, the testing of hypotheses then it follows that since a hypothesis is a predicted outcome deduced from theory that the results are in fact theory laden. Yet postpositivists (and critical theorists) would resist the term "facts" due to the impossibility of proving theory. Therefore, this position is subsumed under postpositivism and critical theory.

The second critique, that theory cannot be proven, is in fact how Popper (1956; 1967) destroyed positivism. Thus postpositivism, which deviates widely here from positivism, is aware of the notion that induction is not sufficient for proof, only deduction. Thus postpositivism has addressed this concern again failing to establish either a necessity for constructivism or a limitation of other paradigms.

The final critique, the value ladenness of facts, is directly addressed within critical theory. Critical theorists use this as the primary focus of inquiry. Postpositivists tend to discount this notion (often to their peril) yet have addressed it, primarily from the notion of paradigm shifts as conceptualized by Kuhn (1970). Therefore, the three arguments supporting the need for constructivism do not in fact provide such a need, failing to distinguish this paradigm from the others in terms of issues left unanswered. The primary difference, however, lies in the ontology of constructivism.

Constructivists have adopted a strong relativist position in which no objects exist outside of their mentally organized state derived from the experience of the individual. Thus, since no theory can be conclusively proven, there exists no set of criteria by which one can judge the veracity of any construction. This ontology is seriously flawed for many reasons but two will be given here: a) temporal sequence and b) reductio ad absurdum arguments.

The first criticism is the violation of temporal sequence or 'to construct the world first one must construct the world'. For a person to effectively create a world from the workings of one's mind, there has to be a mind to create the world, yet according to constructivism this is impossible since there is no mind through which the world can be created. Thus denying the existence of an objective reality through subjective introspection seems to be confusing ontology with the residue of experience.

In addition, the notion of having a world that is created entirely through mental experience faces logical difficulties in explaining such external

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phenomenon as gravity (Sokol, 1996). If in fact reality is "relative" to one's worldview, then it is difficult to explain gravitation and death due to their universality. Therefore one must accept that either phenomena exist outside of both mental constructions and cultural lenses or accept the notion of cross-cultural universals in the construction of reality. Either position creates an insoluble problem for the constructivist notion of relativism and in fact posits a type of consciousness-centered universe that is as flawed as the pre-Copernican universe. The logical extension of this position is a decent into solipsism in which one's consciousness becomes an inescapable trap.

Secondly, reductio ad absurdum arguments abound in the undermining of the notion of a strong subjectivist ontology. One of the most pernicious consequences of this position is the elimination of evidence as an evaluation of theory. If evidence becomes simply "one of many opinions" then the practice of science descends into simple conjecture. For example, the historical event known as the Nazi Holocaust becomes a mental construction. Taking a strong relativist position one can construct it such that this event never happened or, more to the point, within this ontology how can it be proven to our fictional constructivist that this event happened? Since there is no method of rectifying experience, then each position (true historical event and ideological construction) is equally valid without possible criticism of the other. This is a possible extension of this strong relativist ontology.

Insert Table 9 About Here

Constructivist epistemology follows ontology in suggesting a subjectivist position that is forced onto all by the constraints of human knowing (Guba, 1990). Since the only type of reality is one's construction of it, then it follows that the relationship between the knower and known is indivisible. Therefore ontology and epistemology are fused in constructivist philosophy.

Insert Table 10 About Here

Finally, the methodology of constructivists follows the previous philosophical positions in suggesting a hermenutic/dialectic approach (Guba, 1990). This approach attempts to approximate as closely as possible the types of constructions that exist in the minds of others. However this seems immediately problematic and at odds with the ontology of this paradigm. If the only things that can be known are one's own constructions, and if "the findings of an inquiry [are] not a report of what is "out there" but the residue of a process that literally creates them" (Guba, 1990, p. 26), then the attempt to construct someone else's construction seems to be the most futile pursuit of all.

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The dialectical process seeks to compare one's constructions with the constructions of others in the hope of producing the most complete construction possible. This again seems wrought with contradictions. For example, when one compares these constructions, one is constrained by the weight of one's own constructions, which according to Guba (1990) cannot be overcome. Further, the attempt to find some kind of "informed and sophisticated construction" and "continuously improving" this construction must be done through one's own construction. Therefore the values, theories and biases of the researcher are there once again to constrain this process.

Insert Table 11 About Here

When examined through the world3 model constructivism is shown to be internally inconsistent and producing irreconcilable conclusions. The relativist ontology suggests that constructivists are denying the existence of world1, however, in an attempt to provide a complete explanation, two possible interpretations will be considered. The first explanation is that the position of a relativist ontology denies the existence of world1. If in fact this position is the position of constructivism, then this position is untenable due to the conclusions already explored (eg. the mental construction of the physical phenomenon of gravity).

The second explanation is that what is being constructed is not an object/event but people's perceptions of these objects and events. If this is the case, then ontology is not what is relative, but epistemology. However, the division of world1 and world 3 allow for a more complete examination of what is being constructed. If world1 does not exist, then the result is to deny the existence of objects until the human mind creates them. If world3 does not exist then the products of the human mind are somehow not constructed.

Therefore the strong relativist ontology creates a choice for constructivists: either a) accept the philosophical consequences of denying world1 and possibly world3 and descend into solipsism or b) to abandon the relativist ontology and accept a relativist epistemology. Though the second option is necessary for the continuation of the constructivist paradigm, it fails to differentiate itself from postpositivistic notions and fails to provide a substantial set of arguments. Therefore the notion of constructivism cannot be held as a serious philosophical position.

In order to more directly compare the positions of the three paradigms a new graphical representation is provided. Figure 1 is a graphic representation of the three paradigms with each paradigm's philosophical position being represented on a continuum in relation to the others. This three dimensional graphic demonstrates the differences between the paradigms more dramatically than previous representations.

Insert Figure 1 About Here

Conclusion

The paradigm dialogue is an attempt to examine the philosophical positions of competing social science "ways of knowing" in the hope of establishing a dialogue between these different schools of thought. In attempting to critique the formulation provided by Guba (1990) four areas were examined: a) the presence of positivism in such as representation, b) the nature of each paradigm as delineated through three philosophical issues, c) the examination of each paradigm through Popper's (1994) world3 model, and d) the graphic representation of each.

The inclusion of positivism in any current formulation is seen as unwarranted after Popper (1963). Since the philosophy is untenable and distinct from postpositivism, the inclusion only serves to misrepresent both. A three paradigm model was proposed which more accurately reflects current social science.

Each paradigm was examined in regard to its stance on three philosophical issues: ontology, epistemology, and methodology. Postpositivism has a critical realist ontology, in which objects existed but could only be approximately known to scientists through experimental methods. Critical theory requires a realist ontology that is similar to positivistic certainty, in which objects exist and exert their influence through a veiled of understanding that is understood through hermenutic/descriptive methods. Constructivism has a relativist ontology that collapses the distinction between knower and known and attempts to approximate local realities through a dialectical process.

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The world3 model demonstrated serious problems for constructivists and critical theorists. Constructivists are forced to either abandon their relativist ontology, due to its dependence on a world created by our minds, or become folded into postpositivism. Critical theorists are confronted with the notion of becoming the heirs of Comtian (1988; Lewes, 1890) positivism through the reliance on certain knowledge revealed through science.

Finally the new graphic representations examine each paradigm in terms of all philosophical issues and their interrelation to obtain a more accurate depiction of the paradigm dialogue. The differences in position reflect each paradigm's ontology, epistemology, and methodology.

The proposed model then is useful for three reasons. The first is an accurate portrait of the relationship between positivism and postpositivism. The former is the product of nineteenth century optimism while the latter demonstrates a serious critique of notions of certainty, knowledge, and the limits of empiricism. This portrait will aid those working within and working outside of postpositivism to better understand its philosophical underpinnings.

This article also examines in detail the philosophical positions of critical theory and constructivism, or the alternative paradigms, with a powerful critique of the sometimes inconsistent positions of each paradigm. The repercussions are serious for both in that the ability to revise theories within each paradigm is limited by the assumptions afforded to each. By eliminating the ability to evaluate evidence, theory revision is relegated to simple power struggles, that is, those who control the positioning of theory control theory revision.

The arguments presented here are especially grave for constructivism. While attempting to examine how humans create an understanding of their own experience this paradigm has embraced a series of philosophical positions that, in their current formulations, eliminate constructivism as a viable paradigm. The inclusion of Popper's (1994) world3 model allows for an even more detailed examination of issues, particularly epistemological commitments.

Overall this article is useful for social scientists in all current research paradigms. It is useful for educating new researchers, particularly graduate students, by examining not only where each paradigm stands, but also comparing the shortcomings of each. This article is useful for an examination and explanation of the somewhat incommensurate views of those already operating under the commitments of competing paradigms hopefully providing a resource for translating between paradigms.

References

Comte, A. (1988). *Introduction to Positive Philosophy*. Indianapolis : Hackett.

Derrida, J. (1974). *Of Grammatology*. Baltimore, MD: Johns Hopkins Press.

Durkheim, E. (1951). *Suicide*. New York: Free Press.

Foucalt, M. (1970). *The Order of Things: An Archeology of the Human Sciences*. New York: Random House.

Guba, E. C. (1990). "The alternative paradigm dialogue." In E. G. Guba (Ed.), *The Paradigm Dialogue (pp. 17-27)*. Newbury Park, CA: Sage

Guba, E. C., & Lincoln , Y.S. (1994). Competing paradigms in qualitative research. In N.K. Denzin & Y.S.Lincolin (Eds.), *Handbook of Qualitative Research (pp. 105-118)*. Newbury Park, CA: Sage.

Heisenberg , W. (1991). The Copenhagen interpretation of quantum theory. In T. Ferris (Ed.) *The World Treasury of Physics, Astronomy , and Mathematics (pp. 86-97)*. Boston: Little, Brown and Co.

Husserl, E. (1962). *Ideas* . Translated by W . Gibson. New York: Collier.

Kerlinger , F. N. (1986). *Foundations of Behavioral Research*. New York: Holt, Rinehart and Winston.

Kuhn, T. S. (1970). *The Structure of Scientific Revolutions (2nd Ed)*. Chicago: University of Chicago Press.

Kuhn, T. S. (1977). *The Essential Tension* . Chicago: University of Chicago Press.

Lacan , J. (1981). *The Four Fundamental Concepts of Psychoanalysis.* New York: W . H . Norton.

Lather , P. (1990). Reinscribing otherwise: The play of values in the practices of the human sciences. In E. G. Guba (Ed)., *The Paradigm Dialogue (pp. 315-332).* Newbury Park, CA: Sage.

Laudan , L. (1977). *Progress and its Problems.* Berkeley: University of California Press.

Lewes , G. H. (1890). *Comte's Philosophy of the Sciences.* London: George Bell and Sons.

Masterman , M. (1970). "The nature of a paradigm". In I. Lakatos & A. Musgraves (Eds.), *Criticism and the Growth of Knowldege (pp. 59-89).* Cambridge: Cambridge University Press.

Morrow , R. A., & Brow n, D. D. (1994). *Critical Theory and Methodology.* Thousand Oaks, CA: Sage.

Peirce , C. S. (1957). *Essays in the Philosophy of Science.* New York: Liberal Arts Press.

Popper , K. R. (1957). *The Poverty of Historicism* . London: Routledge.

Popper , K. R. (1959). *The Logic of Scientific Discovery.* London: Routledge.

Popper, K. R. (1963). *Conjectures and Refutations: The Growth of Scientific Knowledge.* London: Routledge.

Popper, K. R. (1972). *Objective Knowledge* . Oxford: Clarenden Press.

Popper, K. R. (1994). *Knowledge and the Mind-Body Problem: In Defence of Interaction*. London: Routledge.

Ritzer , G. (1980). *Sociology: A multiple paradigm science*. Boston: Allyn & Bacon.

Sokol, A. (1996). A physicist experiments with cultural studies. *Lingua Franca, 6 (4)*, 62-64.

Weber , M. (1968). *Economy and Society*. New York: Bedminster.

Table 1

Representation from Guba & Lincoln, 1994

Positivism	Post-Positivism	Critical Theory	Constructivism

Table 2

World3 Model from Popper (1994)

World1<---------->	World2 <---------->	World3
physical bodies	mental states	products of human minds

Table 3

Postpositivism's probabilistic realism can be approximately represented as:

PP

Absolute realism Absolute Relativism

Table 4

Post-positivistic epistemology can be approximately represented as:

PP

Knower/Known are completely separable	Knower/Known are completely inseparable

Table 5

Post-positivistic methodology can be approximately represented as:

PP

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focus on hypothesis testing (a priori hypotheses)

focus on emerging data (a posteriori hypotheses)

Table 6

Critical theory's veiled realist ontology can be approximately represented as:

CT PP

Absolute realism Absolute Relativism

Table 7

Critical theory's subjectivist epistemology can be approximately represented as:

	PP	CT
Knower/Known completely separable (Strong Objectivist)		Knower/Known are are completely inseparable (Strong Subjectivist)

Table 8

Critical Theory methodology can be approximately represented as:

PP	CT
focus on hypothesis testing	focus on emerging data
(a priori hypotheses)	(a posteriori hypotheses)

Table 9

Constructivism's strong relativist ontology can be approximately represented as:

CT	PP	CM
Absolute Realism		Absolute Relativism

Table 10

Constructivism's subjectivist epistemology can be approximately represented as:

PP	CT	CM
Knower/Known are completely separable (Strong Objectivist)		Knower/Known are completely inseparable (Strong Subjectivist)

Table 11

Constructivist methodology can be approximately represented as:

PP	CT CM
focus on hypothesis testing	focus on emerging data
(a priori hypotheses)	(a posteriori hypotheses)

Figure 1

Three-Dimensional Model of Philosophical Positions of Social Science Paradigms